Aug. 18, 1925. 1,550,254

G. C. HEWEY.

FLUID OPERATED JACK

Filed April 27, 1922

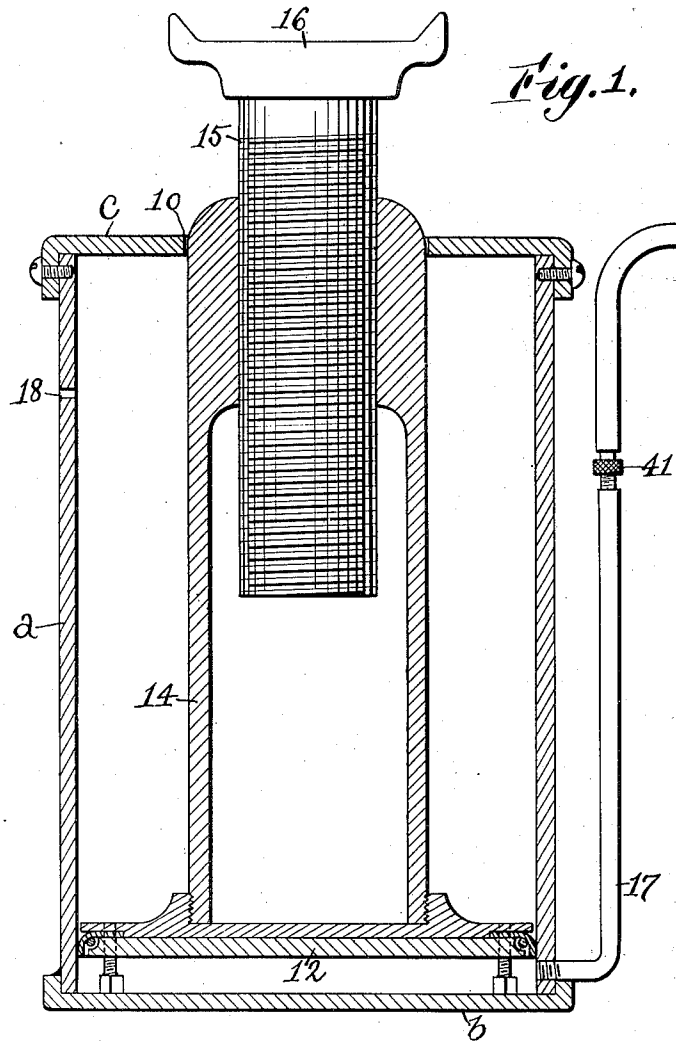


Fig. 1.

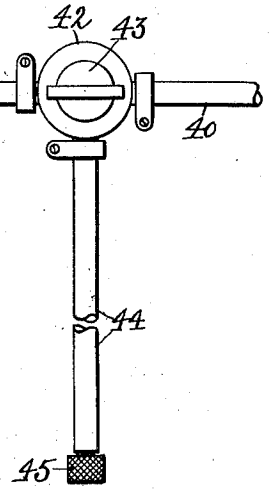
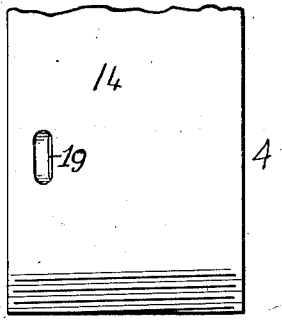


Fig. 3.



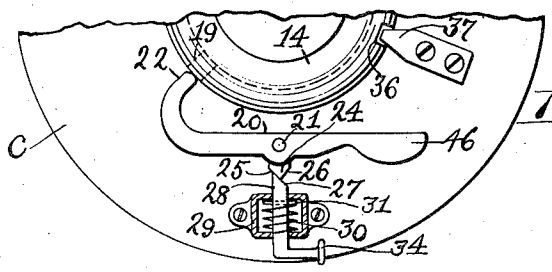


Fig. 2.

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UNITED STATES PATENT OFFICE.

GUY C. HEWEY, OF BANGOR, MAINE.

FLUID-OPERATED JACK.

Application filed April 27, 1922. Serial No. 556,927.

To all whom it may concern:

Be it known that I, GUY C. HEWEY, a citizen of the United States, residing in Bangor, in the county of Penobscot and State of Maine, have invented an Improvement in Fluid-Operated Jacks, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to a lifting jack operated by fluid pressure and adapted among other uses to be employed with automobiles.

The invention has for its object to provide a simple, efficient and relatively inexpensive fluid-operated lifting jack, which is capable of being quickly adjusted with relation to the object to be lifted.

The invention further has for its object to provide means for mechanically locking the piston in its elevated position, and also has for its object to provide the jack with a fluid supply pipe having means for controlling the passage of fluid through the supply pipe so that the fluid pressure in the jack may be utilized for pumping up the tires of the automobile.

Provision is also made for releasing the weight of the load from the locking device to permit the latter to be easily operated manually.

These and other features of this invention will be pointed out in the claims at the end of this specification.

Fig. 1 is a vertical section of a fluid-operated jack embodying this invention.

Fig. 2, a detail in plan of the jack shown in Fig. 1 to illustrate the mechanical lock for the piston, and

Fig. 3, a detail of the piston rod shown in Fig. 1.

Referring to the drawing *a* represents the cylinder of the jack, which is closed at its lower end by the base *b* and is provided at its upper end with the head *c* having a central opening 10 through which passes the piston rod of a piston 12 located in the cylinder and constructed in a known manner to make a fluid tight fit with the inner surface of the cylinder *a*.

The piston rod referred to is preferably made as herein shown and consists of a hollow lower member 14, which is attached to the piston, and a movable upper member having a threaded shank or stem 15, which engages the internally threaded upper end of the lower member 14.

The shank or stem 15 may and preferably will be provided with a head or saddle 16.

By making the piston rod of two members, the upper one of which is adjustable with relation to the lower, the piston rod can be quickly and easily adjusted by the user to approximate its operative length before the jack is placed under the vehicle or in its operative position.

The piston 12 is elevated by fluid pressure, preferably air, which is admitted into the cylinder *a* below the piston 12, and to this end the cylinder is provided with a fluid inlet pipe 17 which is connected with the source of supply for the fluid pressure, as, for instance, the ordinary air pump usually carried on automobiles and not herein shown.

Provision is made for limiting the upward movement of the piston by the fluid pressure admitted into the cylinder, and to this end, the latter is provided with one or more outlet ports 18 near the upper end of the cylinder, which afford an outlet for the fluid pressure when the piston 12 has reached substantially the end of its upstroke, thereby avoiding any danger of an excessive fluid pressure accumulating in the cylinder.

Provision is also made for mechanically locking the piston in its elevated or operative position, and to this end, the lower member 14 of the piston rod is provided near its lower end with an elongated opening or slot 19, with which co-operates a locking lever 20, which is pivoted at 21 to the head *c* of the cylinder and has a finger 22 which is adapted to enter the slot 19 when the piston rod member 14 has been moved above the upper surface of the cylinder head *a*, which occurs when the piston 12 has reached approximately the end of its upstroke.

The locking lever 20 is provided with a projection 24 having two inclined or cam-surfaces 25, 26, with which co-operate the inclined end 27 of a shaft 28 rotatably mounted in a housing 29 affixed to the head *c* of the cylinder.

The inclined end 27 of the shaft 28 is held in engagement with one or the other of the inclined surfaces 25, 26, by a spring

30 located in the housing 29 and bearing at one end against the rear wall of the housing and at its other end against a pin 31 carried by the shaft 28.

In Fig. 2, the inclined end 27 of the shaft is shown as engaged with the inclined surface 25 and the locking lever 20 is thereby held by the spring 30 in its inoperative position out of engagement with the piston rod. By rotating the shaft 28 by means of the crank or handle 34 thereon, the inclined end 27 of the shaft 28 is brought into engagement with the inclined surface 26 and the lever 20 is turned by the spring 30 so that its finger 22 engages the lower member 14 ready to be projected into the slot 19 in said member when the piston reaches approximately the end of its upstroke. By making the slot 19 elongated as shown in Fig. 3, the piston can be raised slightly by air pressure, to remove the upper wall of the slot from engagement with the locking finger 22 so as to relieve the lever 20 from the weight of the load and permit the light spring 30 to turn the lever 20 into its inoperative position.

To ensure proper alignment of the slot 19 with the finger 22 on the locking lever, provision is made for guiding the piston in its upward movement, and preventing it turning, and to this end, the lower member 14 of the piston rod is provided with a slot 36 extended lengthwise thereof and into which projects the end of a guide bar 37 affixed to the head *c* of the cylinder (see Fig. 2.)

The fluid inlet pipe is preferably made in sections suitably coupled together, the section 17 being preferably made of metal and the section 40 of flexible rubber hose or pipe, which may be of any length desired and readily detachable from the metal section 17 by the coupling 41 of known construction.

The flexible pipe section 40 may and preferably will include in it the casing 42 of a three-way valve 43 of known construction, by means of which the fluid pressure in the cylinder may be utilized for assisting in pumping up the tire of an automobile.

To this end, the casing 42 of the three-way valve 43 has connected with it a flexible branch pipe or hose 44, which is provided with the usual coupling 45 connecting it in a known manner with the usual air inlet of the inner tube located in the tire.

The flexible branch pipe 44 is capable of being connected by the three-way valve with the cylinder *a* of the jack to utilize the air pressure in the jack cylinder for pumping up the tire when the jack piston is being lowered.

It is also capable of being connected with the air pump or supply for air under pressure by means of the three-way valve, so that the tire can be inflated by air while the wheel of the vehicle is held up by the jack, and it can be cut off by the three-way valve from the jack and air supply, when the air supply is connected with the jack as illustrated in Fig. 1.

It will be observed that the section 40 of the air inlet pipe containing the three-way valve 43 and having the branch pipe section 44 may be made of any desired length, so as to enable the operator to control the operation of the jack by means of the three-way valve from a comfortable position beyond the vehicle.

To enable the locking lever 20 to be unlocked from beyond the vehicle when the jack is located under the vehicle, the locking lever is provided with a tail piece 46, which projects beyond the housing 29 and is capable of being engaged by a stick or rod in the hands of the operator, so as to turn the locking lever into its inoperative position.

From the above description, it will be seen that a very simple, highly efficient and relatively inexpensive fluid-operated jack is provided for use with automobiles, motor trucks and the like.

Claims:

1. In a fluid-operated jack, in combination, a cylinder provided with a base, a head and a fluid inlet, a piston in said cylinder, an extensible piston rod having a lower member attached to said piston and provided with a slot near its lower end, and having an upper member movable lengthwise of said lower member, a locking lever mounted on said head and having a finger capable of entering the slot in said lower member and provided with a projection having cams, and a rotatable shaft mounted on said cylinder head and co-operating with said cams to hold said locking lever in its operative and inoperative positions.

2. In a fluid-operated jack, in combination, a cylinder provided with a base, a head, a fluid inlet near its base and a fluid outlet near its head, a piston in said cylinder co-operating with said fluid outlet to uncover the same when the piston has reached substantially the end of its upstroke, a piston rod attached to said piston, and extended through said head and provided with a slot, and with a longitudinally extended guideway, a guide to enter said guideway, and a locking lever mounted on said cylinder to turn in a substantially horizontal plane and co-operating with said piston rod to enter the slot therein and mechanically lock the piston in its elevated position.

3. In a fluid-operated jack, in combination, a cylinder, a piston therein, a piston rod attached to said piston, a locking lever

co-operating with said piston rod and provided with cams, and a rotary shaft co-operating with said cams.

4. In a fluid-operated jack, in combination, a cylinder, a piston therein, a piston rod attached to said piston, a locking lever co-operating with said piston rod and provided with a tail piece, cams attached to said lever between its pivot and the end of its tail piece, and means co-operating with said cams to hold the locking lever in its operative and inoperative positions.

In testimony whereof, I have signed my name to this specification.

GUY C. HEWEY.